Amendments to the Claims

The listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently amended) [[A]] An isolated and purified polynucleotide selected from the group consisting of:

(a) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO: 2 ~~or 4~~;

(b) a polynucleotide comprising ~~a coding region of~~ the nucleotide sequence ~~of~~ corresponding to position 80 to 1924 in SEQ ID NO: 1 ~~or 3~~; and

(c) a polynucleotide comprising [[a]] the nucleotide sequence ~~encoding a protein having binding activity to afadin or actinin and comprising the amino acid sequence of SEQ ID NO: 2 or 4, in which the amino acids are substituted, deleted, inserted and/or added; and~~ with at least 95% homology to the nucleotide sequence corresponding to position 80 to 1924 in SEQ ID NO: 1 which have the binding activity to afadin and/or actinin

~~(d) a polynucleotide which hybridizes under stringent conditions with a DNA comprising the nucleotide sequence of SEQ ID NO: 1 or 3 and which encodes a protein having binding activity to afadin or actinin~~.

2. (Withdrawn) A polypeptide encoded by the polynucleotide of claim 1.

3. (Original) A vector into which the polynucleotide of claim 1 is inserted.

4. (Currently amended) [[A]] An isolated and purified host cell ~~carrying~~ transformed with the polynucleotide of claim 1 ~~or a vector into which the polynucleotide of claim 1 is inserted~~.

5. (Original) A method for producing the polypeptide encoded by the polynucleotide of claim 1, comprising the steps of culturing a host cell expressively carrying either said polynucleotide or a vector into which said polynucleotide is inserted, and recovering the produced polypeptide from said host cell or culture supernatant thereof.

6. (Currently amended) [[A]] An isolated and purified polynucleotide ~~which specifically hybridizes under highly stringent conditions to the polynucleotide of claim 1 and~~ which comprises at least 15 nucleotides of claim 1.

7. (Withdrawn) An antisense polynucleotide to the polynucleotide of claim 1, wherein said antisense polynucleotide suppresses the expression of the polynucleotide of claim 1.

8. (Withdrawn) An antibody which binds to the polypeptide of claim 2.

9. (Withdrawn) A method of screening for a candidate compound of an actin cytoskeleton-controlling agent, comprising the steps of:

(a) contacting afadin or actinin with the polypeptide of claim 2 and a test compound;

(b) measuring the binding activity of afadin or actinin to the polypeptide of claim 2; and

(c) selecting the test compound which alters the binding activity, compared with that which occurs in the absence of the test compound.

10. (Withdrawn) A method for assaying a heart disease which comprises the step of detecting the expression level of a gene encoding the polypeptide of claim 2 in a test subject, wherein an elevated level of gene expression as compared to control expression is indicative of heart disease.

11. (Withdrawn) The method for assaying a heart disease of claim 10, comprising the steps of:

(a) extracting an RNA sample from cardiac muscle cells of a test subject;

(b) measuring the amount of RNA encoding the polypeptide of claim 2 contained in said RNA sample; and

(c) comparing the amount of the measured RNA with a control, wherein an elevated level of RNA is indicative of heart disease.

12. (Withdrawn) The method for assaying a heart disease of claim 10, comprising the steps of:

(a) extracting a protein sample from cardiac muscle cells of a subject;

(b) measuring the amount of the polypeptide of claim 2 contained in said protein sample; and

(c) comparing the amount of the measured polypeptide with control, wherein an elevated level of polypeptide is indicative of heart disease.

13. (Withdrawn) The method for diagnosing a heart disease of claim 10, wherein the heart disease is myocardial infarction or myocarditis.

14. (Original) The polynucleotide of claim 1, wherein said polynucleotide is the polynucleotide of (a).

15. (Original) The polynucleotide of claim 1, wherein said polynucleotide is the polynucleotide of (b).

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Withdrawn) The polypeptide of claim 2, wherein the polypeptide has at least 70% indentity to SEQ ID NO: 2 or 4.

20. (Withdrawn) The polypeptide of claim 2, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO: 2 or 4.

21. (Withdrawn) The method for diagnosing a heart disease of claim 11, wherein the heart disease is myocardial infarction or myocarditis.

22. (Withdrawn) The method for diagnosing a heart disease of claim 12, wherein the heart disease is myocardial infarction or myocarditis.

23. (New) An isolated and purified host cell transformed with the vector of claim 3.